

A STUDY OF NATIONAL PAYMENT GATEWAY SYSTEM IN INDONESIA

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Abstract. National Payment Gateway (NPG) is a system created by the government to actualize interconnection between switching and interoperability of national payment system. NPG is expected to provide convenience for Indonesian society to conduct interbank transactions. This research analyses the system, the adoption, and the challenge and future of NPG card. The analysis of NPG system shows there are similarities and differences system of NPG in several banks. For the adoption of NPG, the author uses modified Technology Acceptance Model (TAM) with four dimensions of Cashless Characteristics (Reachability, Compatibility, and Convenience), Individual Differences (NPG Knowledge and Innovativeness), Adoption Readiness (Perceived Usefulness, Perceived Ease of Use, Social Influence, and Facilitating Conditions), Perceived Credibility Risk (Privacy Risk and Security Risk). The result calculated by PLS-SEM indicates that Compatibility and Convenience has a significant influence to Perceived Usefulness and Perceived Ease of Use, and NPG knowledge also has a significant influence to Perceived Usefulness. While, in the adoption readiness dimension, only Facilitating Conditions that is proven has a significant effect to Intention to Use and the result shows people did not really concern about the Privacy and Security Risk of NPG card because both variables Privacy Risk and Security Risk in the Perceived Credibility Risk dimension has not significant influence to the Intention to Use of NPG card. Furthermore, the challenges and future of NPG is to overcome the disadvantages and to create the easier, faster, and safer system for society.

Keywords: National Payment Gateway; Cashless Payment; Debit Card; Technological Acceptance Model.

INTRODUCTION

Vice President of Bank Mandiri stated that they are still experiencing problem of the lack vendors in producing NPG card. While Bank BCA admitted it is hard for them to offer customers to use NPG because they required to open new account. Then, Director of BRI conducted socialization through social media to realize the target 30% of NPG users and BRI has special queuing system to make the process of replacement can be done faster. Through a number of things, we can find out that the implementation of NPG system among several banks in Indonesia varies.

The unpreparedness of NPG system also hinders the adoption in Indonesian society, moreover, although it was launched a year ago, there are still many people who do not know about NPG card and the system implemented by the government.

Then, Indonesia is the country with the highest e-commerce transactions in Southeast Asia, this is because Asian consumers, especially Indonesia, are highly dependent on purchasing products online (Anggraeni, 2018). The use of online transactions through the internet is a convenience for customers to carry out various types of transactions. This can affect the growth of NPG system in Indonesia. Therefore, the objectives of this research are;

1. To mapping and analyze the implementation of National Payment Gateway (NPG) system in several banks that issues the program.
2. To analyze the intention to use of National Payment Gateway (NPG) by Indonesian customers.

This research is limited by the data that only provided by NPG users and Bank Representatives in Indonesia. This research uses both qualitative and quantitative approach, the qualitative approach will interview the representatives of several banks in Indonesia and the users of NPG card, while quantitative approach will distribute the questionnaire to 200-300 respondents of NPG users as well.

LITERATURE REVIEW

In this research, the author developed some hypotheses by modified the research of Davis (1989, Changsu Kim (2009), and another literature regarding mobile payment. Furthermore, this research used modified TAM model because it is widely used to identify the effect of one variable to other variables, specifically in adoption of technology.

Below the author explained the variables used in this research regarding to technology acceptance model for cashless payment.

- **Cashless Characteristics**

- 1. Reachability**

Reachability based on the previous research defined as the connection between users and technology that can be reach by other entities. From the previous research, Reachability has positive correlation to intention, perceived usefulness, and perceived ease of use in mobile wireless and mobile payment (Sanghyun Kim, 2009; Islam, 2017; Debajyoti Pal, 2015).

- 2. Compatibility**

Compatibility was determined by another researcher as a degree where the technology innovating continuously until it fits to the existing value (Rogers, 1995). Previous research found compatibility has positive correlation while the other researcher found it has no positive correlation to intention to use of mobile payment (Niina Mallat, 2006; Changsu Kim, 2009).

- 3. Convenience**

Convenience defined as the variable that can attract more adopters because they believe it can make their life easier (Debajyoti Pal, 2015). The convenience used as the determinant factor of the successful mobile payment (Gia-Shie Liu, 2016; Debajyoti Pal, 2015).

- **Individual Differences**

- 1. NPG Knowledge**

Knowledge is the ability of individuals to filtering the information and differentiate the relevant and irrelevant information (Rieh, 2004). Previous research found that m-payment knowledge has a positive impact on the perceived ease of use rather than personal innovativeness (Changsu Kim, 2010).

- 2. Personal Innovativeness**

Innovativeness is one of the personality characteristics on how people respond to the new ideas (Man Kit Chang, 2005). Personal innovativeness has positive correlation to perceived usefulness of wireless internet service and intention to use of mobile technology (June lu, 2005; Changsu Kim, 2009).

- **Adoption Readiness**

- 1. Perceived Usefulness**

According to Davis (1989) perceived usefulness is individual's assumption that the use of technology will increase their performance (Adnan Abd. Hamid, 2016). Previous research found that the Behavior Intention of using computer have a positive relation to Perceived Usefulness (Fred D. Davis, 1989), another researcher also said that Perceived Usefulness influences the intentions of e-text (Robert W. Stone, 2013), and Perceived Usefulness also affect the Intention to use of online travel service or e-service (Hongxiu Li, 2014).

- 2. Perceive Ease of Use**

Still according to Davis (1989), Perceived Ease of Use is an individual's assumption that the use of technology will be free from effort (Fred D. Davis, 1989). Perceived Ease of Use has positive correlation to intention to use of using computer, web-based learning, and mobile payment (Fred D. Davis, 1989; Chao-Min Ciu, 2008; Changsu Kim, 2010).

- 3. Social Influence**

Social influence is a level of individual valued the important of the perception or suggestion by other people of how she or he should use a new system (Viswanath Venkatesh, 2003). Social influence has been used by many researchers as the influence factor of intention to use related to internet and technology (Mirrela Kleijnen, 2004; Nysveen, 2005; Viswanath Venkatesh, 2003).

- 4. Facilitating Conditions**

Facilitating conditions is a level of individual believes that use of the system is supported by the existence of organization and technical infrastructure (Viswanath Venkatesh, 2003). Viswanath Venkatesh (2003) also proposed facilitating condition as a variable that may influence the intention to use of mobile commerce.

- **Perceived Credibility Risk**

- 1. Privacy Risk**

Privacy determined as the individual control over something that is consider important or unveiling and subsequent use of their personal information (George R. Milne, 2004). Previous research concluded that privacy risk negatively influences the intention to use mobile commerce (Rakhi Thakur, 2013).

- 2. Security Risk**

Based on Kolsaker and Payne (2002), security risk was defined as the perception regarding method of payment and storing as well as transmission of information. Thakur Rakhi (2013) found that the security risk together with privacy risk significant uninfluenced or deterrent the intention to use of mobile payment in Indian context (Rakhi Thakur, 2013).

Below in the Figure 1 is the conceptual framework according to the literature that has been explained.

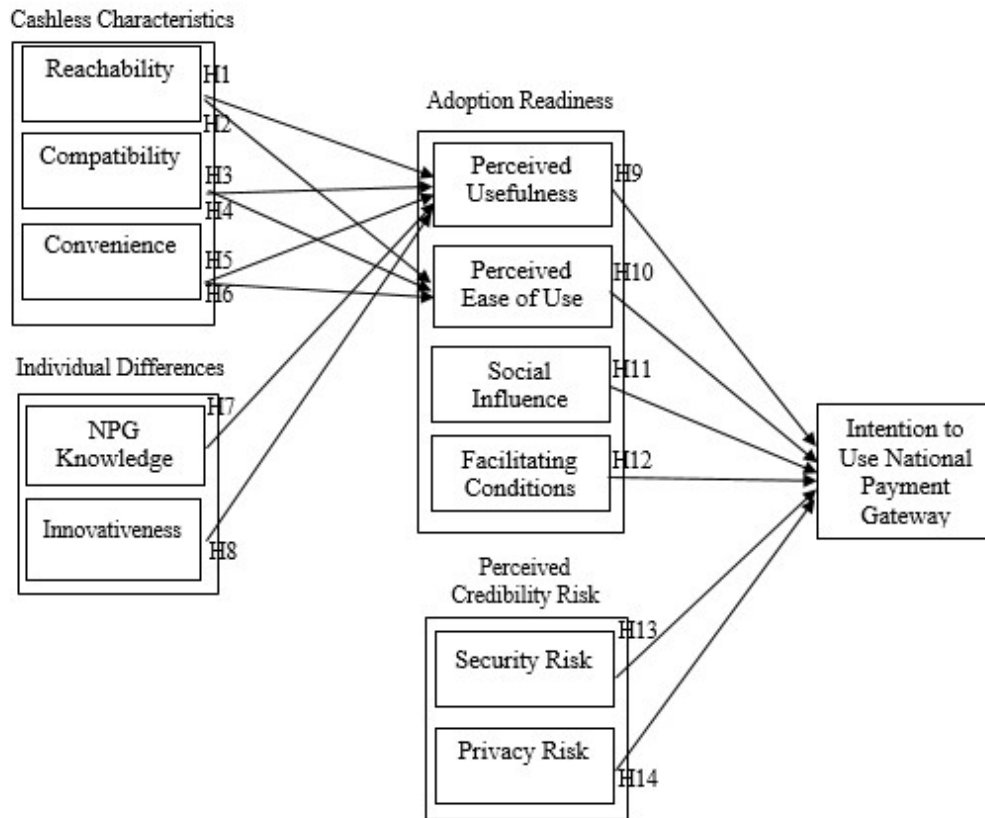


Figure 1. Conceptual Framework

METHODOLOGY

Qualitative Approach

In this approach, author interviewed bank representatives of BCA, BNI, Mandiri, and BRI in order to know more deeply about the system and the implementation of National Payment Gateway. Besides that, the author also interviews the NPG users to know various things regarding NPG system using open-ended question. After gathered all the interview results, the author segmented the sentences obtained during data collection into several categories, then label those categories into words that are often used by informants (Ni'mah, 2015). Furthermore, to validate the data, author will use triangulation by comparing the information from several different informant's statement that have same expertise (Jick, 1979).

Quantitative Approach

The author used survey method as the cheaper and quicker data collection (Nigel Mathers, 2009). The respondent of this research is NPG users, female and male, and located all around Indonesia. The sample that will be used is around 200 to 300 with the minimum of 150 as the suggestion of Malhotra (2010). This approach was analyzed using PLS-SEM because it is believed to be an easy to use, for small sample sizes, reflective measurement and non-normally distributed data. And PLS-SEM also widely used by marketers to examine the relationship.

Both Qualitative and Quantitative Approach will use purposive sampling technique that selected the informant based on their availability and capability to provide information (Taherdoost, 2016).

FINDINGS AND ARGUMENT

Qualitative Findings

One of the findings of this approach is the maps of NPG system among several banks. To easier the reader, author makes the tables of similarities and differences of the system in each banks that can be seen in the Table 1 and Table 2.

Table 1. The Similarities of NPG System

| The Similarities of NPG System | |
|--|---|
| 1. The Advantages | <ul style="list-style-type: none"> o NPG card can be used in every payment channels in Indonesia. o All NPG card have used the chip to make it safer. |
| 2. The Disadvantages | <ul style="list-style-type: none"> o NPG card cannot be used abroad. o NPG card cannot be used for online transactions using debit numbers. |
| 3. The Use of NPG Card | <ul style="list-style-type: none"> o The use of NPG card is not mandatory but is recommended. o The use of NPG card depends on customers and the availability at each branch offices. |
| 4. Information About NPG | <ul style="list-style-type: none"> o Customers can find NPG's information on official website of each banks. |
| 5. The Length of Process of Making NPG Card | <ul style="list-style-type: none"> o The process of making NPG card depends on the availability of the cards at the branch office. o If the NPG card is available, it only takes one day to open or replace the card. |

Table 2 The Differences of NPG System

| The Difference of NPG System | |
|---|---|
| Bank BNI | Bank BCA |
| 1. Limit Transactions <ul style="list-style-type: none"> o Higher than visa/mastercard. | 1. Limit Transactions <ul style="list-style-type: none"> o Same with visa/mastercard. |
| 2. Interbank Transaction Cost <ul style="list-style-type: none"> o Same with visa/mastercard. | 2. Interbank Transaction Cost <ul style="list-style-type: none"> o Cheaper than visa/mastercard. |
| 3. Requirements to Open New Account of NPG Card <ul style="list-style-type: none"> o Initial deposit (depends on bank), ID card, and NPWP (optional). | 3. Requirements to Open New Account of NPG Card <ul style="list-style-type: none"> o Initial deposit (depends on bank), ID card, and NPWP (optional). |
| Bank BRI | Bank Mandiri |
| 1. Limit Transactions <ul style="list-style-type: none"> o Higher than visa/mastercard. | 1. Limit Transactions <ul style="list-style-type: none"> o Lower than visa/mastercard. |
| 2. Interbank Transaction Cost <ul style="list-style-type: none"> o Cheaper than visa/mastercard. | 2. Interbank Transaction Cost <ul style="list-style-type: none"> o Same with visa/mastercard. |
| 3. Requirements to Open New Account of NPG Card <ul style="list-style-type: none"> o Initial deposit (depends on bank), ID card, and NPWP (obligatory). | 3. Requirements to Open New Account of NPG Card <ul style="list-style-type: none"> o Initial deposit (depends on bank), ID card, and NPWP (obligatory). |

The similarities and differences of NPG system in several banks in Indonesia is because some provisions are regulated centrally by the government and some provisions that can be determined by each bank. Moreover, the unclear information also affects the differences of NPG system in several banks.

Quantitative Findings

The author calculated and analyzed the data of the questionnaire using PLS-SEM, the result indicates by fourteen hypotheses, there are six hypotheses accepted and eight hypotheses rejected. The intention to use of NPG card is affected by Compatibility, Convenience, NPG Knowledge, and Facilitating Conditions. *The result prove that Reachability does not influence Perceived Usefulness or even Perceived Ease of Use. It is affected by digital payment that can make their transaction faster and easier than contact transaction.*

Whereas, both Compatibility and Convenience significantly influence Perceived Usefulness and Perceived Ease of Use. By the result, it means that the NPG card is really compatible and provide convenience to the users, since the data shows that 85% of

Indonesia society is using debit or credit card as the payment method (Movanita, 2018). The NPG Knowledge positively influence Perceived Usefulness. It means by knowing the information about NPG card system makes people will be more understand about what is National Payment Gateway that lead to intention to use. The result shows that Facilitating Conditions is influence the Intention to Use of National Payment Gateway. It means the intention to use of NPG is affected by the existence technical infrastructure.

CONCLUSIONS

All the advantages and disadvantages have been implemented by several banks. Several differences in the system occur because there are several things that are not regulated by the government, so it depends on each bank. Moreover, there are several systems that has no clear statement, for example in the transaction cost. By the quantitative result, the intention to use of NPG card is affected by Facilitating Conditions, NPG knowledge, Convenience, and Compatibility. The challenges of NPG are to overcome the disadvantages and to face the digital payment era. While the future of NPG is high adoption due to a better system and a better knowledge and to create a payment system that is suitable for the future needs.

RECOMMENDATIONS

This recommendation aims to get a better system and intention to use of NPG that addressed to the government and banking association to provide an integrated staff of the banks, deliver the progress of NPG system continuously to the public in order to provide awareness and get the feedback from society to continuously improving the system, collaborate with another digital payment to face the digital era, and create an integrated online system that contain the data of NPG users to overcome the problem of banks that cannot force their customers to use NPG card. By this way, bank can strictly make an NPG card for those who have not listed in the system.

REFERENCES

- Adnan Abd. Hamid, F. Z. (2016). The Effects Of Perceived Usefulness And Perceived Ease Of Use On Continuance Intention To Use E-Government. Elsevier B.V. Retrieved December 8, 2018, from https://ac.els-cdn.com/S2212567116000794/1-s2.0-S2212567116000794-main.pdf?_tid=f3bd1b28-8e19-47ce-8ea6-467a5655fd32&acdnat=1544242065_c7d0fa20cc98cc7a6ed347fb1bfa82c5
- Anggraeni, K. (2018, November 28). Transaksi E-Commerce Indonesia Tertinggi di Asia Tenggara. Retrieved February 28, 2019, from <https://bisnis.tempo.co/read/1150204/transaksi-e-commerce-indonesia-tertinggi-di-asia-tenggara/full&view=ok>
- Chi-Cheng Chang, K.-H. T. (2013). The influence of perceived convenience and curiosity on continuance intention in mobile English learning for high school students using PDAs. *Technology, Pedagogy and Education*, 22(3), 373-386. Retrieved May 22, 2019, from <https://www.researchgate.net/publication/262906725>
- Davis, F. D. (1989, September). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly* , 13(3), 319 - 340. Retrieved March 31, 2019, from https://www.researchgate.net/publication/200085965_Perceived_Usefulness_Perceived_Ease_of_Use_and_User_Acceptance_of_Information_Technology?enrichId=rgreq-af181485-8c3c-44b9-bbca-08e058b867f0&enrichSource=Y292ZXJQYWdlOzlwMDA4NTk2NTtBUzoxODMwMzQzNzY2MzAyNz
- Debajyoti Pal, V. V. (2015). An Empirical Analysis towards the Adoption of NFC Mobile Payment System by the End User. *Procedia Computer Science*, 69, 13-25. doi:10.1016/j.procs.2015.10.002
- Fred D. Davis, R. P. (1989, August). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35, 982-1003. Retrieved December 7, 2018, from